THE CALIFORNIA VETERINARIAN

THE CALIFORNIA STATE
VETERINARY MEDICAL
ASSOCIATION

65th ANNUAL CONVENTION

CONVENTION HEADQUARTERS
LAFAYETTE HOTEL

JUNE 22-23-24, 1953
LONG BEACH, CALIFORNIA

MARCH - APRIL
1953

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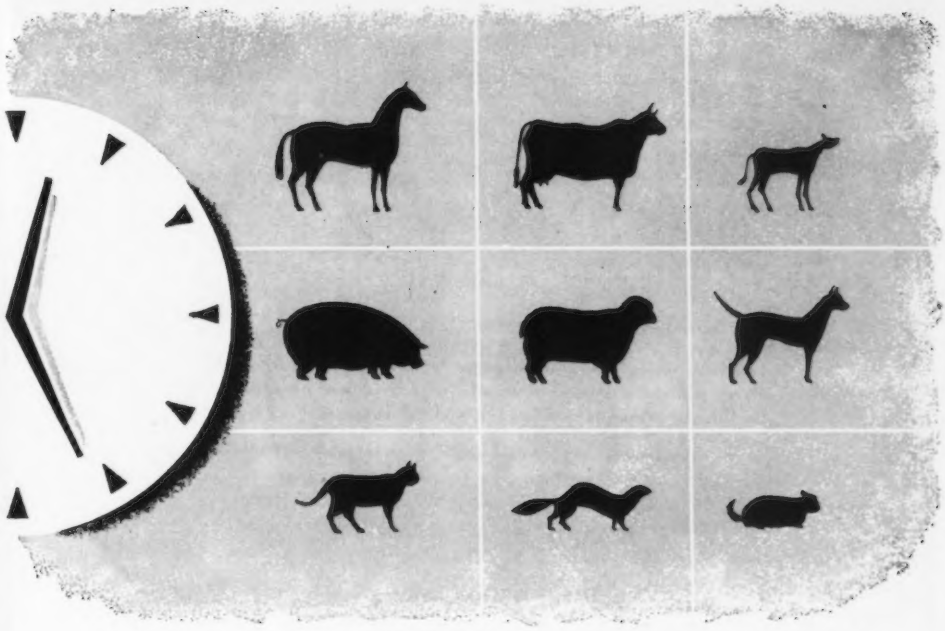

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THE CALIFORNIA VETERINARIAN

MARCH-APRIL, 1953

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Infectious Hepatitis*

Dr. Baker paid tribute to the monumental work of Laidlaw and Dunkin. The distemper immunization regime developed by them is still in use today, but the live virus booster injection is seldom used. It is felt by many practitioners that this last booster is unnecessary considering today's large dog population and the increasing incidence of natural exposure as a result. This natural exposure is thought to replace the live virus booster.

Distemper vaccination didn't eliminate distemper and distemper-like diseases, however. Green in 1928 reported a fox encephalitis which was later identified by Rubarth in Sweden as a viral disease of dogs to which the name infectious hepatitis was given.

Canine infectious hepatitis is antigenically distinct from distemper. The virus is worldwide and often exists in an inapparent infection.

The disease is not spread by airborne transmission. It is most commonly spread by infective urine. The virus is fairly resistant and can live for 24 hours in 95 per cent alcohol. It can be transmitted by contaminated needles.

The incubation period is variable. Naturally it is six to nine days, in infection by ingestion. The incubation period in intravenous infection, as with a contaminated hypodermic needle, is only two days. Subcutaneous infection has an incubation period of four days.

Infectious hepatitis is characterized by a saddle type temperature curve. The temperature is high for one to two days, drops slightly for a day or two and then returns. This is not the diphasic temperature curve that is characteristic of canine distemper. One day after the onset of fever a leukopenia develops. The leukopenia is considered to be lower than that of distemper, but this cannot be used diagnostically since it varies with the severity in each disease. The leukocyte count returns to normal at the termination of the fever which lasts from one to seven days. There is seen a marked congestion of the mucous membranes but abdominal tenderness is reported as being variable. In early stages a serous ocular discharge occurs.

Up to this point in the course of the disease it is impossible to differentiate it from canine distemper. Ten to 21 days after exposure the animal will be recovering. The mortality is ten per cent and death occasionally occurs 14 to 21 days after onset of symptoms. In animals which recover, at about 21 days a unilateral or bilateral corneal opacity may occur. The opacity is due to tissue edema and not a result of cellular infiltration. The opacity clears without treatment and can be considered a good prognostic sign. This corneal opacity is not a sequel to distemper. Delayed clotting time is also observed in the initial stages of the disease. This has not been found to occur in distemper.

Diagnosis is easily made on postmortem examination. A sero-sanguinous fluid is found in the peritoneal cavity. The liver is mottled and friable. The intestines are often blood filled. The wall of the gall bladder is thickened due to edema, which grossly gives it a whitish appearance. Large cytoplasmic inclusion bodies are found in the liver and other tissues. The inclusion bodies differ from those found in distemper.

The virus persists in the urine of recovered dogs. Saliva, feces, blood are also infective.

Recovered dogs exhibit whitish spots on the kidney cortex, as a result of focal interstitial nephritis. This lesion is identical with that found in chronic leptospirosis.

Infectious hepatitis will often run a morbidity of 80 per cent, especially in dog kennels.

Differential diagnosis from distemper is difficult. It may be based on darker and greater congestion of the mucous membranes in initial stages and on the prolonged bleeding time which are seen in infectious hepatitis. The muco-purulent ocular and nasal discharge which is common in distemper is rarely seen in hepatitis. Initially in hepatitis there is more depression and greater weight loss; these conditions are later reversed, becoming more prominent in distemper in the latter stages.

In experimental dogs, mortality of 89 per cent was observed in dogs which were infected with distemper and subsequently with infectious hepatitis. This observation demonstrates the importance of vaccinating simultaneously for both distemper and hepatitis. The following vaccination schedule is recommended: At one site inject combined avianized distemper vaccine and infectious hepatitis vaccine, on the other side inject bivalent antiserum at 0.5 cc per pound. The anti-sera do not interfere with the vaccines and serve to protect while the virus is eliciting antibody response. Immunity to hepatitis after use of inactivated virus lasts about 6 months but in this interval natural exposure should occur with natural immunity resulting. The attenuated distemper vaccine provides protection in about one day. This is attributed to the phenomenon of interference. Three months of age is considered to be the optimum age for vaccination, since viruses given earlier tend to persist.

A slight febrile reaction with serous and muco-purulent ocular discharge may accompany the use of avianized distemper vaccine.

*A lecture delivered by J. A. Baker on January 27, 1953, to the California State Veterinary Medical Association Mid-Winter Conference held at the School of Veterinary Medicine, University of California, Davis. Abstracted by Roger Simpson.

Veterinarians Employed by State Department of Agriculture Granted Reclassification and Raise in Salary

Following is a letter received from the California State Personnel Board:

Mr. Charles S. Travers, March 12, 1953.
Executive Secretary,
California State Veterinary Medical Assn.,
16th and Mission,
San Francisco, California.

Dear Mr. Travers:

On February 28, 1953, the State Personnel Board took the following action:

1. Established two new classes with salary ranges and work week groups as indicated:

Class	*Salary*	*Group*
Veterinarian I	$436-530	4C
Veterinarian II	481-584	4C

2. Ordered that positions in the classes of Veterinarian I or Veterinarian II now or hereafter established in the Department of Agriculture and assigned to meat inspection work be allocated to Work Week Group 1.

3. Adopted the following resolution:

WHEREAS, the State Personnel Board on February 28, 1953, established the classes of Veterinarian I and Veterinarian II; and

WHEREAS, the duties and responsibilities of these classes are substantially included in the existing specification of Veterinarian; therefore be it

RESOLVED, That any person with civil service status in the class of Veterinarian on February 28, 1953, holding a position or hereafter assigned a position which is or hereafter may be classified as either Veterinarian I or Veterinarian II shall be deemed to have civil service status in either class without further examination; and be it

RESOLVED Further, That any existing employment list established for the class of Veterinarian shall be used to fill vacancies in the classes of Veterinarian I or Veterinarian II until such lists are abolished, exhausted or superseded by lists for the classes of Veterinarian I or Veterinarian II .

4. Revised the specification and changed the title of the following classes as indicated:

From	*To*
Supervising Veterinary Meat Inspector	Veterinarian III (Meat Hygiene)
Livestock Disease Control Specialist	Veterinarian III (Disease Control)
Livestock Pathologist	Veterinarian III (Pathology)

5. Increased the salary range for the following classes from $481-584 to $530-644, effective March 1, 1953:

Veterinarian III (Meat Hygiene).
Veterinarian III (Disease Control).
Veterinarian III (Pathology).

Very truly yours,

JOHN F. FISHER,
Executive Officer.

The Personnel Board staff in its memorandum of recommendations to the Personnel Board, dated March 12th, stated that further consideration would be given to pathologists' pay, for those who qualify for membership in the American College of Veterinary Pathology. It is hoped that the Personnel Board will find justification for this recognition and pay.

Thus after 20 months comes to a satisfactory close this Association's efforts to provide adequate pay and a career incentive to veterinarians employed by the California State Department of Agriculture.

The Association is deeply indebted to the various livestock associations, organizations and individuals, and especially to Mr. A. A. Brock, Director of the State Department of Agriculture, for wonderful support they have given in behalf of better pay for veterinarians in the Department of Agriculture. Beyond a doubt, this had an important bearing on the favorable action taken by the California State Personnel Board.

An analysis of the Board's decision indicates substantial improvement in salary and career incentive offered to veterinarians in state employ. Formerly there were two classes.

Classes	*Number Authorized*	*Salary Range*
Veterinarian	115*	$415-505
Supervisory	24	487-584

(a) Supervising Meat Inspector
(b) Livestock Pathologist
(c) Livestock Disease Control Specialist

At present there are three classes:

Classes	*Number Authorized*	*Salary Range*
Veterinarian I	68	$436-530
Veterinarian II	38	487-584
Veterinarian III	24	530-644

(a) Meat Hygiene (c) Disease Control
(b) Pathology

In Veterinarian I, 68 men advanced one step in salary range. In Veterinarian II, 38 advanced from former class, Veterinarian salary $415-505 to $487-584. In Veterinarian III, 24 advanced two steps in salary and the subtitles were changed to more dignified terms. These are more in keeping with present-day professional standards. Thus the word "livestock" has been eliminated and "meat hygiene" substituted for "meat inspection."

The increase in salary with the reclassification (addition of Veterinarian II class) will provide a certain amount of career incentive which was utterly lacking heretofore. It is hoped that this may induce young men of high quality to secure employment with the California State Department of Agriculture, thus making it possible to keep the department fully staffed and what is more important, enable it to render service of the highest type to the livestock industry of this state.

Further, the Personnel Board stated that consideration was being given to a plan to give all state employes a 5 per cent raise July 1, 1953; but in view of the present upgrading of salaries to veterinarians, this group cannot be expected to be included in the July revision.

* 20 short.

STUDENTS NEWS

By JAMES L. BITTLE, '53

In recalling the short history of our AVMA chapter here at Davis, you will note we are now approaching our first anniversary as a full-fledged chapter. This, coupled with four years as a junior chapter, is a short history indeed, yet precedence is rapidly taking place.

The chapter membership, bordering on 200 students, is supported by a complex organization centering around a 14-man executive committee. This, plus numerous other committees, conducts the business of the largest student organization on campus. To coordinate the activities of the chapter with student and faculty functions, a weekly newsletter is now being published by the chapter.

At the last state convention it was probably noted by the attending practitioners that a student job placement program was organized. For those practitioners who were unable to attend the conference and still wish to interview graduates or students, inquiries may be addressed to Dr. T. J. Hage, School of Veterinary Medicine, Davis.

BILL KORTUM
President—Fall 1952

The perpetual trophy established by the class of '52 to be awarded annually to the class which has obtained the highest number of points in scholarship, student activities and sports was awarded to the class of 1953. The trophy should serve to encourage a friendly competitive spirit among classes.

Two recent appointments have been made by the chapter that are worthy of note. Dr. J. A. Howarth was selected to serve as faculty representative for the next two semesters. Bob Brewer, class '54, was chosen to represent the chapter at the coming AVMA convention in Toronto. He will meet with student representatives from other veterinary schools to discuss problems common to the student chapters.

Concerning the semester's social calendar, the chapter would like to announce two coming events. The annual Formal Dance and the Spring Steak Fry. We would like to extend an invitation to all alumni and hope we may see you at these functions. When the date and place have been arranged, we will notify you.

BEN LUNDBERG
President—Spring 1953

Other items of interest: A son, Marc John Troxell, born to George and Mamie Troxell; a son, Ralph Talbot Burt, born to Merle and Pauline Burt. Married—Gordon Theilen to Carolyn Simon on March 6.

American Animal Hospital Association

The American Animal Hospital Association meeting will be held at the Hotel Radisson, Minneapolis, Minnesota, May 6th to 9th, 1953. All veterinarians interested in small animal medicine are cordially invited to participate in the meeting. President Myron A. Thom, Pasadena, California, with the assistance of Program Chairman George W. Mather, School of Veterinary Medicine, University of Minnesota, St. Paul, have completed a splendid program for the meeting.

Through the courtesy of Pitman-Moore Company and the Radio Corporation of America a three and one-half day session of televised clinical demonstrations are planned, which will feature the surgical section of the program.

Any information regarding this meeting may be obtained by writing to the American Animal Hospital Association, Office of the Secretary, Wayne H. Riser, 5335 Touhy Avenue, Skokie, Ill.

We would like to try once again to run a question and answer column. Send in your tough ones and we will try to find the answers.

The Nutritional Basis of Health and Production*

D. E. JASPER, D. V. M., Ph.D., Davis, Calif.

The keen competitive nature of animal industry today demands that maximum production be achieved at a minimum cost in order for the livestock man to achieve a profit. This situation is speeding the widespread application of basic nutritional discoveries in the feed lot, pasture, and on the range.

The trend of animal nutrition is perhaps best illustrated by the poultry industry, which has blazed trail in applying the knowledge acquired through laboratory experiments to practical feeding. Just a few years ago broilers were expected to weigh around 2.5 pounds at 11 weeks on 4.5 pounds of feed per pound of gain. Today something is wrong if they do not weigh 3.5 pounds at the same age on only 3.0 pounds of feed per pound of gain. A similar transformation has taken place in egg production.

What accounts for the difference? Chiefly better nutrition. Wheat, corn, oyster shell, and maybe a few cracklins are no longer sufficient. Instead a diet as carefully compounded as any medical prescription is used, a different diet for each age group, a special diet for egg production and yet another for meat production.

As you know, the rest of the livestock industry is following in this same pattern with concentrates in amount and kind being varied with milk production, special fattening rations in the feed lot, and so on. This results in more efficient and rapid production, and average yields have been going up yearly.

One of the very important recent discoveries was the utilization of urea as a substitute for proteins in the diet of ruminants. Economically speaking, this practice leaves more of our insufficient supply of oil meals for non-ruminants. Rumen organisms convert urea N to protein. It is, however, not advisable to replace more than one-third of the protein by feeding urea, since higher levels of urea feeding produce toxic effects. We must also remember that urea furnishes no energy. Protein does. The energy equivalent of the replaced protein must therefore be supplied in the form of grain, molasses, or other high energy feed. 14 pounds urea + 100 pounds grain = 100 pounds protein or for each pound of urea add 7 pounds of grain. Urea feeding is therefore profitable only when the cost of high-energy feeds such as molasses or grain is less per ton than protein supplements such as the oil meals.

It is also well to remember that urea is much more satisfactory when mixed with molasses than when attempts are made to feed it in powdered form. This is due in part to a marked stimulation to urea and fiber-splitting micro-organisms by the content of sugar, iron, potassium, phosphorus and some unknown qualities in molasses. Sufficient sulfur is needed to promote protein synthesis.

The discovery of urea utilization, important as it was in itself, may have even more far reaching consequences by the stimulation of research into the nature and importance of rumen microflora and rumen physiology in general. The practical applications of these studies were illustrated by the very fine talks by Dr. Pounden last year, published in THE CALIFORNIA VETERINARIAN.

We have also found that the energy demands of ruminants are met in a vastly different way from those of non-ruminants. With the latter, digestible carbohydrate is converted to glucose and absorbed and utilized as such for energy purposes. In the case of ruminants, only a small amount of the digestible carbohydrate is absorbed as glucose. By far the greater part is absorbed as short-chain fatty acids, acetic acid, proprionic acid, and butyric acid. The acetic acid accounts for about 60 per cent of the total, and proprionic and butyric acids account for about 20 per cent each. Proprionic acid is the only one which is readily converted to glucose by the liver. For this reason administration of proprionic acid usually results in increased blood sugar and is a logical means of getting a somewhat prolonged glycemic effect in cases of ketosis.

Beta-hydroxybutyric acid can normally be used by the tissues in metabolism but accumulates in large amounts in ketosis. Acetic acid or the acetate salt has alternate pathways which it may follow. It may be utilized for energy by the tissues, it may form fat, or it may conjugate to form aceto-acetic acid which also is present in large amounts in cases of ketosis. It may be that in ketosis there is a block in the normal pathways of acetate metabolism so that it cannot be utilized by the tissues for energy purposes in the usual manner. Therefore ketones accumulate in the blood stream in large amounts while at the same time increased demands are made upon the limited quantity of glucose present.

APF and Antibiotics

Since 1930 when it was discovered that animal protein contained a factor stimulating growth not present in plant proteins of equivalent amino acid content, it has been necessary to include animal proteins in the diets of livestock to insure optimum growth. Just a few years ago Vitamin B_{12} was discovered and it was soon shown that this was responsible

*An Abstract of a talk given at the January Conference for Veterinarians at Davis, January 26, 27, 28, 1953.

for much of the growth-promoting activity of animal protein. Fermentation methods of B^{12} production revealed the extra growth-promoting effect of small amounts of aureomycin.

The addition of Vitamin B^{12} to the rations of swine is estimated to save over $24,000,000 annualy in Iowa in feed costs alone. The use of antibiotics such as penicillin, aureomycin, and terramycin is also saving swine growers large amounts of money. Antibiotics in swine are most helpful up to about 75 to 125 pounds of weight.

Antibiotics are being used in dairy calves to a limited degree. Growth stimulation is greatest up to 10 or 12 weeks of age. Use of antibiotics beyond this age is likely to interfere with rumen development.

Antibiotics render their greatest effect in the young animal. It has also been shown that perfectly healthy animals are not benefitted. An old but neglected concept is thus thrust upon us with renewed vigor, i.e., that the usual animal is living at a certain "disease level" the severity of which vitally affects the growth rate and well-being of the animal. Antibiotics appear to exert their greatest influence also in the animal living at a relatively high "disease level".

It is generally felt that antibiotics exert their effect by modifying intestinal flora. They may thereby have a "therapeutic effect" by inhibiting pathogenic organisms or they may have a "nutritional effect" by restricting bacteria which compete for available critical nutrients or by promoting synthesis of essential nutrients. The more recent observations that both arsanilic acid derivatives and the "surfactants" inhibit growth-promoting effects give considerable credence to the pathogen inhibition theory.

Arsanilic acid derivitives, like antibiotics, confine their growth-promotion primarily to the young, whereas, the surface tension reducing agents, "surfactants" exert a greater effect in the older animal. Both are under experimental study but neither are released for feeding as yet. Over-feeding of the arsanilic acid products will cause poisoning.

Though we still are confronted with older nutritional problems, such as muscular dystrophy and vitamin A deficiency, technological advances are helping to solve some of these. For example, a stable vitamin A preparation in which the vitamin is sealed in tiny pellets of micro-crystallin wax, permits easy and economical supplementation of feedlot or range cattle.

Nutritional research today is advancing along the following lines which promise changes in our feeding practices as they lead to newer knowledge.

1. Fractionation of life into critical and non-critical periods. This has been long recognized in poultry. From weaning to 75 pounds is the most critical nutritional period in postnatal swine. Fractionation remains to be accomplished in ruminants. The changing requirements during "cycles of life" must yet be ascertained.

2. Carryover or residual effects. Certain water-soluble vitamins may be stored and manifest their effects later on. Residual effects of deficiency may appear at a later date.

3. Importance of intestinal micro-organisms in both monogastric animals and ruminants. Both beneficial and harmful roles are recognized.

4. Importance of "disease level." Rather than living in perfect health, every animal exists in a steady state or balance of "disease level." Nutritional requirements, especially of vitamins and protein are increased with disease. Response to antibiotics depends to a large degree upon disease level.

5. Inter-relationships of nutrients. Many nutrients have a tendency to depend upon each other and to spare each other.

6. Synthetic diets for the newborn. These are particularly being sought in the case of dairy cows and swine. In the former case it saves the milk for market. In the latter, it permits an extra pig crop per year. Considerable progress is being reported in these directions but they are not yet to the stage where the ordinary farmer could hope to profit by adopting these practices.

7. Utilization of synthetic amino acids to permit better use of proteins of lower biological value.

8. Hormone influences on metabolism from products such as stilbestrol, thiouracil, and iodinated casein.

The elucidation of these principles promises as fruitful a period of nutritional research as did the days when the importance of TDN crude fiber, protein, carbohydrate, and fat was the main concern of investigators.

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STERLING RESEARCH CORP.

Dairy Div. C **Buffalo 3, N. Y.**

General McCallam Retires

With his retirement at the end of January, General McCallam brought to a close a term of Army service approximately as long as that of the Veterinary Corps itself. Retirement will not put a period to his career, however, but merely a comma, since he will shortly take up the strenuous duties of President of the AVMA.

Replacing General McCallam is Colonel Jacob L. Hartman, also a graduate of the University of Pennsylvania in 1917, and who also began his Army career shortly after receiving his veterinary degree. He has most recently served as Chief of the Veterinary Branch of the EUCOM Medical Division.

Terramycin Tested in Calf Feed

Terramycin has the same effect as aureomycin in speeding growth, when fed to calves at the rate of about 30 milligrams per 100 pounds of calf, according to the results of research at the University of Vermont. Riddell, Fitzsimmons and MacKay (J. Animal Science, spring issue) tested two groups of calves, one group up to 12 weeks old, and the other 6 to 25 weeks. The first group gained about 15 pounds more than the controls in 12 weeks. The second group also showed a quick spurt for a few weeks. After eight weeks, the difference had become much less noticeable, and the daily weight gains for the whole period, averaged out about an ounce more than the control animals.

Dr. C. E. Wicktor, Los Angeles, and Dr. W. J. Zontine, Lancaster, were selected delegate and alternate, respectively, of the California State Veterinary Medical Association to the House of Representatives of the American Veterinary Medical Association for the conventions to be held in the years 1953 to 1956.

Going to Toronto?

The program for the Toronto AVMA meeting promises to be outstanding. The 150 contributors to the six section meetings will come from all parts of North America, from England and Nigeria. Closed circuit television will be used liberally. On the entertainment side is a golf tournament which should appeal to our California experts. Those who can attend this meeting, the first to be held in Canada for some time, are advised to get their reservations in early. Those who can not get away are advised to reconsider; it could probably be arranged. How long since you attended an AVMA meeting? Don't you think you need more of a professional refresher than the printed page can transmit? Now is the time! Toronto is the place!

Harry P. Bonnikson Appointment

Dr. Harry P. Bonnikson, of Sacramento, for many years a livestock disease control specialist in the Division of Animal Industry, California Department of Agriculture, has been appointed Assistant Chief, Bureau of Livestock Disease Control, in the department.

The appointment was announced by Dr. Arthur G. Boyd, Chief of the Division, on the basis of a civil service examination.

Dr. Bonnikson was an employee of the State Dairy Bureau when it operated as an independent agency with headquarters in San Francisco prior to the organization of the State Department of Agriculture. He was a chemist for the State Dairy Bureau from October 1916 to 1919 when the bureau became part of the newly-organized department. He served in World War I as lieutenant in the Veterinary Corps. After attending the University of California, he entered New York State Veterinary College, Cornell University, Ithaca, New York, and in 1915 graduated with a degree in veterinary science. His first position with the department was that of field veterinarian.

As livestock disease control specialist, Dr. Bonnikson has participated in several major livestock disease control programs in California, including foot and mouth disease, sheep scabies, bovine tuberculosis, Brucellosis, and sheep scrapie.

Since 1927 Dr. Bonnikson has been assigned to Sacramento headquarters for the department, assisting in the administrative work of animal disease control programs.

Humanity Pays Off

The Hormel Company, at the request of the president, H. H. Corey, has developed a method of anesthetizing hogs prior to shackling which is beautiful in its simplicity and efficiency. Hogs are knocked out with carbon dioxide gas while on a conveyor, shackled and killed while unconscious. The hogs are anesthetized in 7 to 12 seconds, showing no symptoms of distress (they merely sniff the air like hunting dogs) and are only unconscious for 15 or 20 seconds. They recover without aftereffects if allowed to live. Hormel reports that one shackler can now do twice the work with half the effort, while the hogs, with this humane treatment, are in better condition, bleed out better, and with less loss from bloody trimmings. It is to be hoped that other slaughterhouses will adopt similar methods.

Aqueous Terramycin

Chas. Pfizer & Co. have announced a new terramycin preparation. It is intended for intramuscular use, and is aqueous in nature. It keeps for two years without refrigeration until it has been reconstituted.

Bureau of Livestock Disease Control

J. E. STUART, D. V. M., Sacramento, Calif.

In the accompanying tabulation of livestock diseases are three items which have not previously appeared in the list, namely, scrapie in sheep, soremuzzle or bluetongue in sheep, and vesicular exanthema importations. These three conditions have been tremendous problems necessitating a great deal of disease control work.

Scrapie in Sheep

A virus disease of sheep, known as scrapie, never before observed in California, was found on August 23, 1952, in two flocks in Butte County. These two flocks consisted of 543 purebred Suffolk sheep of which 19 animals showed clinical evidence of the disease. The infection was brought to these flocks by some sheep imported in 1948 from Ontario, Canada.

An agreement was entered into by the United States Bureau of Animal Industry and this division for sharing in indemnity payments for sheep destroyed in the effort to eradicate this infection from California. The eradication consisted of killing all of the 543 infected sheep and also the tracing and slaughter of all breeding animals sold from these flocks to other sheep owners in the state. The exposed sheep that had been sold consisted of 363 animals and were located in 51 flocks in 11 counties. A total of 906 sheep were slaughtered.

The disease control work in connection with the outbreak of scrapie in sheep was completed on January 7, 1953, insofar as can be determined at this time. The long incubation period of this disease, from one year to three years and over, causes uncertainty as to complete eradication.

Soremuzzle or Bluetongue in Sheep

The disease in sheep called soremuzzle, which spread beginning about the middle of September, ended about the middle of December, 1952. The disease was called soremuzzle because it was the same as a condition previously described by that name in Texas. The manifestations of the disease also appeared to coincide with description of a disease in South Africa called bluetongue in sheep. Material from the local outbreaks was sent by the College of Veterinary Medicine, University of California, to the Director of Veterinary Services, Union of South Africa, and a report was received on January 20, 1953, that it was the same as the virus causing bluetongue. The name bluetongue therefore now is applicable to the outbreak that occurred in California.

Vesicular Exanthema of Swine

This virus disease of hogs, occurring almost exclusively on garbage feeding hog ranches, has occurred in California during the past twenty years. In June, 1952, it spread to many other States and became a national problem. According to latest reports vesicular exanthema now has occurred in 32 states in addition to California.

A big problem in connection with this disease during last summer was extensive occurrence of vesicular exanthema infection in slaughter hogs shipped to California packing establishments from other states, principally from the midwest section. Incoming shipments of infected slaughter hogs again occurred in January, 1953. To run the necessary tests on the infected lots, to supervise necessary quarantines and to accomplish disinfection of corrals, runways, slaughterhouse floors and railroad cars is a difficult undertaking.

In every case of vesicular exanthema outbreak, whether on a garbage feeding hog ranch or among imported slaughter hogs in stock yards or slaughterhouse pens, a quarantine must be issued and maintained until a test is run on bovines to make sure the infection actually is vesicular exanthema. Vesicle material also is collected wherever possible and sent to the Veterinary College at Davis where a study is being made to develop a rapid laboratory test for vesicular exanthema and to determine the various types of virus.

Successful Examinees

We are pleased to announce that the following applicants passed the State Board examination given January 29th to 31st of this year:

John Kenneth Allen, Harlan, Iowa; Leslie Billingsley, 213 Geer Road, Turlock, Calif.; William Allen Bumstead, Station Veterinarian, Presidio of San Francisco, Calif.

Robert Leroy Carlson, Sequim, Wash.; John Frank Christensen, 626 D Street, Davis, Calif.; Clarence Alexander Delliquadri, General Delivery, Paso Robles, Calif.; Daniel Durniak, 1346 E. State St., Ithaca, N. Y.; Edwin Eliot, 11220 S. Church St., Downey, Calif.; Lewis Benjamin Huff, 797 So. Arroyo Parkway, Pasadena, Calif.

Royal Erhardt Klofanda, Brownfield, Texas; George Alexander Linton, 7 Asbill Court, Davis, Calif.; Russell Martin Madison, 566 Med. Sq. HAFB, Hamilton, Calif.; Robert Lionel Mercer, 814 19th St., Apt. B, Santa Monica, Calif.; Hubert Otto Meyer, 620 So. Cedar St., Pecos, Texas; Lyle Kenneth Miller, Box 48 Wood St., Harmony, Penn.

William Francis Schmitt, 8621 54th Ave., Elmhurst, N. Y.; Theodore Tower Smith, 3200 Holliday St., Wichita, Falls, Texas; Hans Smolenski, 411 23rd Ave., San Francisco, Calif.; Richard Cowling Weldon, 2063 Arroyo Ave., San Carlos, Calif.; Arnold Halnan White, 11564 E. Firestone Blvd., Norwalk, Calif.; Raymond Hamilton White, 131 Graves St., San Luis Obispo, Calif.; Margaret Esme Wood, 11170 Olympic Blvd., West Los Angeles 64, Calif.

Dr. L. M. Hurt of Sierra Madre was married recently.

Governor Warren has reappointed Dr. Gaylord K. Cooke and Dr. R. A. Ball to the Board of Examiners Veterinary Medicine.

Livestock Diseases Reported

J. E. STUART, D. V. M.

Chief, Bureau of Livestock Disease Control, Division of Animal Industry, State Department of Agriculture, Sacramento, California.

Tabulation of diseases reported to the State Bureau of Livestock Disease Control during the period September to December, inclusive, also a summary of the reports for the previous eight months and totals for the year 1952.

	Spt.-Dec. Inc., 1952			Previous 8 months			
	North	Central	South	North	Central	South	Totals 1952
Actinomycosis	1		2				3
Anaplasmosis	22	9	9	17	9	8	74
Anthrax, cattle	24	3	1	4	3	2	37
hogs	7		2				9
sheep	3			1			4
horses	5						5
Balano-posthitis, sheep					1		1
Bovine bac. hemoglobinuria	2	4		1	1	1	9
Coccidioidal granuloma		4	1		8		13
Coccidiosis, cattle				1	1		2
sheep				2			2
Contagious ecthyma, sheep	4	2		2	2		10
Cysticercus bovis	3	4	7	5	23	35	77
Encephalitis, cattle	3						3
Equine encephalomyelitis	14	22	13	67	170	36	322
Foot rot, cattle		1		2	3		6
sheep	1			5	2		8
Hog cholera	9	12	2	16	13	6	58
Inf. atrophic rhinitis, hogs		2			2		4
Infectious keratitis, cattle					2	1	3
Johne's disease, cattle		2			1		3
sheep	1						1
Leptospirosis, cattle		3	1	1	2	1	8
Listerellosis, cattle						1	1
sheep			2	2		1	5
Mycotic stomatitis, cattle	4	4	4	6	10	1	26
horses	1						1
Paratyphoid infection, cattle		1	4			3	8
hogs			2	2			4
Scrapie, sheep	2						2
Screw worm infestation		500					500
Soremuzzle or bluetongue, sheep	193	3					196
Swine erysipelas	1	2	1	1	5	1	11
Vesicular exanthema, native hogs	5	25	14	6	31	32	113
importations					68	38	106
Vibrio fetus, cattle	1	5	2	1	2	1	12
sheep				2			2

The figures above for screw worm infestation and soremuzzle in sheep do not represent actual reports but are estimations from veterinarians in the respective areas.

The Mastitis Complex

O. W. SCHALM and GLADYS M. WOODS

School of Veterinary Medicine, University of California, Davis

Clinical mastitis is often the result of an interplay between bacterial infections and managerial practices. Bacterial types available for invasion of the udder may vary among dairy herds. Factors concerned are number of cows, animal replacement methods, cohabitation of animal species, and concentrations of moisture and filth in the environment. Managerial practices that may predispose to infection and influence severity of mastitis include insanitary, incomplete, and harsh milking, and the abuse of therapy.

Mammary glands of young cows are frequently free of bacteria; cows intermediate in age show an increasing incidence of udder flora; and old cows quite uniformly harbor bacteria in their udders. Bacteria classified as the *cocci* (micrococci and streptococci) appear to be more invasive for the udder than the *bacilli* (coliform group) for, under natural conditions, coccal flora usually predominate.

The *cocci* found in bovine milk may be classified from a clinical point of view as (1) harmless, (2) potential pathogens of environmental origin, and (3) pathogens of mammary gland origin. The first group contains both micrococci and streptococci; the second group comprises *Str. uberis, Str. dysgalactiae* and the less frequent offenders, *Str. zooepidemicus* and Lancefield Groups G and L streptococci. Finally, group three consists of the serious offenders, *Str. agalactiae* and *Micrococcus pyogenes.*

In so far as the pathogens in the last group are concerned, managerial practices definitely influence the severity of the mastitis. Incomplete milking of glands harboring *Str. agalactiae* will usually be followed by appearance of symptoms; and in the case of *Micrococcus pyogenes* infections, harsh milking seems to be an important aggravating factor.

Satisfactory control of mastitis may be attained ordinarily by (1) milking cows in sequence according to age or knowledge of udder infections, (2) proper sanitation and milking technic, and (3) judicious use of mammary therapy. In respect to the latter, failure to employ an aseptic technic in administration of intramammary infusions against pathogenic cocci may result in the establishment of bacillary infections such as *Escherichia coli, Aerobacter aerogenes,* and the refractory *Pseudomonas aeruginosa;* furthermore, observations thus far tend to suggest that, in some manner, the elimination of these cocci through vigorous segregation accompanied by intramammary therapy (blitz method) increases the susceptibility of the udder to bacillary invasion.

Western States Poultry Disease Workers' Conference

The following papers were presented at the poultry conference, January 26, 1953, at Davis, and abstracted by the Student Chapter of the AVMA:

Infectious Bronchitis

D. V. ZANDER, D. V. M.

An outbreak of infectious bronchitis in a large California laying establishment was reported and its implications discussed. Three hatches were affected. The majority of eggs showed albumen of watery consistency, and were deficient in thick albumen. Yolks seemed unaffected. On autopsy, yolk blobs were found in the abdomens, oviducts were impacted with albumen, and in one instance 29 shelless eggs were counted in the abdomen.

Non-layers were segregated. They are physically indistinguishable from layers.

Although vaccination at eight to twelve weeks of age is recommended, Dr. Zander believes in vaccinating as early as possible since less money is tied up in younger birds. The van Roccal strain (fifth serial passage at 1 mg./cc.) is used, and though experimentally no chick mortality is reported (less than 1 per cent), mortality is encountered under field conditions, probably as a result of stress.

No. in Hatch	Month of Hatch	Age at Time of Outbreak	% Eggs Classed AA	% Weighing 23 oz./doz.
3000	Dec.	20-22 weeks	30	21
2500	Jan.	18 weeks	36	22
2000	Feb.	12-13 weeks	80	20
	Control		86	60

Note: The egg production of the December hatch remained always 10 per cent lower than the other two groups.

* * *

Pullorum Control

R. A. MUELLER, D. V. M.

The California program was reviewed. Results of the program, on a state basis, are very gratifying, incidence having been reduced since 1941 in turkeys from 14.9 to 0.12 per cent; in chickens from 10.4 to 1.2 per cent. As of the present year only, "pullorum clean" will be recognized for turkey growers. "Pullorum clean" and "pullorum passed" will be the only classes recognized for poultry.

The commercial polyvalent antigen seemed to take care of the "variant" problem satisfactorily.

* * *

Paratyphoid Control

P. D. De LAY, D. V. M.

Existing control procedures and problems of policy in relatively clean flocks were discussed. Proper disease control with special emphasis on autopsy and good management practices should be continued if temporary relaxation of the control program should be permitted. Typing for definite diagnosis is complicated by the presence of eight different factors associated with the incriminated Salmonella organisms. The "O" strain, with its four factors, seems to be the most significant in clinical infection.

Poultry Disease Research*

Humidity exerts an important effect on body temperature. At a temperature of 100 F., increasing humidity from 45 to 70 per cent increased the body temperature of hens to a point where some died of heat prostration.

Replacement pullets have been vaccinated with fully virulent bronchitis virus before they come in to lay, in a field trial in San Joaquin valley. Results appear good, but another year is required before data are complete.

Small organisms have been found in many of the birds afflicted with 'air sac disease'. These have been propagated on artificial media and inoculated into normal birds without consistent takes. Attempts at developing a quick test have been unsuccessful, the exact cause of the disease is uncertain, and there is no good way of evaluating treatments.

Considerable work has been done on the problem of arthritis in meat birds, which is causing condemnation of tens of thousands of pounds of chicken meat by federal inspectors. The investigation is still in progress.

Research continues on the nature and causative mechanism of damage to eggs from disease, such as small or misshapen eggs, poor shell, poor interior quality. Newcastle and bronchitis are among the diseases responsible.

Completion of new facilities permits expansion of the program of training in poultry husbandry. A brochure "There's an opportunity for you in the poultry business" is available. Student's receive training in disease control as well as husbandry. Recognition of disease symptoms and proper use of diagnostic and treatment services are emphasized.

The poultry husbandry department works closely with the diagnostic laboratories of the state, and in addition handles all special bird work not done by state laboratories, related to squabs, pigeons, pets, etc.

*Excerpts from the University of California's Progress Report to the Poultry Industry.

Upjohn Releases Biosulfa

One of Upjohn's latest products is a triple sulfa tablet with penicillin. Each scored tablet contains 100,000 u. of crystalline penicillin G, 2.5 grains each of sulfadiazine, -merazine, and -thiazole, and 4 grains of calcium carbonate. A repository type of procaine penicillin, in peanut oil with aluminum monostearate, is also available, under the name of Depocillin.

Call for Cooperative Veterinarian

Some poultrymen like to dose their flocks with this and that, and squirt them with various vaccines according to the directions on the label. Others would prefer to leave the practice of medicine to the medico, but can't find a veterinarian who specializes in poultry. Perhaps veterinarians do not specialize in poultry for fear of starving to death. Certainly there are not enough poultry specialists in our ranks, and we reproduce herewith the suggestion of Herbert A. Hogsett, published in his "Chicken Chatter" for February. His ideas are worth discussing:

The increasing seriousness of the disease problem, particularly the respiratory complex, in our more concentrated poultry areas presents a challenge to poultrymen to do something about it. We have been thinking for some time that perhaps a step in the direction of self-help on this problem might be the formation of a group of poultrymen who would contract the services of a poultry veterinarian. We feel that this presents an opportunity for a veterinarian to get established with a guaranteed income the first year and an opportunity for poultrymen to get veterinary service at a reasonable figure.

As a means of starting some thinking along this line let us say a group of 100 poultrymen banded together for this purpose. A flat fee of $5 per month for each poultryman would mean a minimum guarantee of $6,000 per year for the veterinarian. For this he would agree to make one call per month on each ranch to advise with the poultryman on any disease problem including some autopsy service. Additional calls or service would be paid for on a fee basis. This could include outbreaks of disease that required more than the one call or it could be where he was called upon to do vaccinating or similar service, this to be provided by a crew hired for the purpose. A live wire veterinarian could make this whole program a very profitable business for himself and still the poultryman would get a service that he is not now getting.

These are just rambling thoughts and may not be practicable. Perhaps a fee per 1000 hens would be more equitable. A guarantee of $6,000 per year may or may not be enough to attract a competent man. However, we have felt that commercial veterinary service for poultrymen has long been needed and this appeals to us as a probable means of getting it started. If several groups were able to do this these veterinarians working with our State Pathological Laboratories and the Veterinary Department of the University would certainly be in a better position to do something quickly about an epidemic that comes in suddenly. There is no doubt in our mind that many of our serious disease problems would not become that if there was early diagnosis and prompt action. Disease germs and viruses build up virulence if allowed to pass from bird to bird and from flock to flock. What might be a "mild" infection if stopped early can become a "nasty" infection and a major problem if allowed to travel unchecked.

We are familiar with many poultry ranches where a veterinary service costing even as much as $500 per year would have been a good investment. Except for emergencies this type of service might be held to $100 per year.

Cooperation is the order of the day. It has worked in marketing and buying. Here service is the "commodity" to be bought co-operatively.

Invitation to a Jubilee

The celebrated Veterinary College of Hannover will hold a jubilee this year in honor of its 175th birthday. The staff of the school wish to strengthen and reaffirm the scientific relationship and friendship between veterinarians and veterinary schools of all nations, and therefore invite you to attend their jubilee and meet as many people as possible. The time is July 29th to 31st, the place is Hannover, in the British zone, easily accessible by car, train, or plane from Bremen and Hamburg; and we suggest that you plan to stop off on your way to Stockholm, to visit one of the oldest veterinary schools in Europe.

The Rector and Academic Senate would, naturally, like to know as nearly as possible how many people to expect, and as soon as your plans are established, you should write to your hosts and let them know that the invitation is accepted. The address is Prof. Dr. R. Völker, Rektor der Tierärztlichen Hochschule, Hans-Böckler-Allee 16, Hannover, Germany.

Applicants

Samuel Apt, Long Beach. Vouchers: D. K. Collins, C. C. Oderkirk.

Robert J. Au, North Hollywood. Vouchers: A. Mack Scott, C. H. Ozanian.

R. C. Conklin, San Lorenzo. Vouchers: C. Edward Taylor, L. D. Meyer.

Wm. V. Dakin, North Hollywood. Vouchers: A. Mack Scott, C. H. Ozanian.

Berton E. Elson, Los Angeles. Vouchers: M. D. Moys, D. R. Cook.

Nathan Miner, Pasadena. Vouchers: N. L. McBride, Richard Barschak.

Sigmund T. Rich, Altadena. Vouchers: C. H. Ozanian, A. Mack Scott.

Laurie R. Davidson, Stockton. Vouchers: G. E. Reiner, H. P. Bonnikson.

Paul R. Stafford, Hayward. Vouchers: H. E. McClung, Nelson E. Clemens.

Programming Is Your Responsibility

W. J. ZONTINE, D. V. M., Lancaster, Calif.

It will be generally agreed that one of the most important functions of the state association is arranging the two programs each year. What is not so generally realized, however, is that programming is not a function of the program committee alone but a responsibility of all the members of the association. This may sound rather strange but the fact remains that the committee is your servant and will arrange the type of program you want to hear.

The program committee has made an effort this year to analyze the problem of programming. First we had to decide what actually constitutes a program, which resolved into four categories:

1. New advances in the field of veterinary medicine.
2. Review of basic subjects and old problems.
3. Subjects of allied professions of interest to veterinarians.
4. Topics not dealing directly with medicine such as economics.

Another fact which must be considered is that in our association, which has 800 members we have a variety of interest to satisfy: There are members in large-animal, small-animal, general and poultry practice, in regulatory work, in research, teaching, public health, etc. Although practitoners make up the largest percentage of members, the men in other fields also pay dues and are entitled to program topics to their individual interest. The size of our association also complicates the task. In smaller associations it is easy to find hotel facilities to accommodate the attendance and a few select speakers can be obtained to address the general session. The number in our association necessitates large convention facilities and the division of our group into three sessions—large-animal, small-animal and general. The increased number of speakers thus required must of necessity include specialists in many fields, to be acceptable. It is not always possible to find the best facilities for our meeting. We hope that you will be sympathetic with some inconveniences that are unavoidable in this respect.

The committee has seen the necessity of some continuity of speakers and topics being carried out on subsequent programs. In order to accomplish this it appears advisable to us that the incoming program chairman (the third vice-president) be appointed a member of the program committee. As an example: several excellent speakers were contacted this year but were unavailable for our programs in 1953. They were available for 1954 and the incoming program chairman can extend invitations immediately. Also we have begun a subject "Veterinary Economics" which has a variety of ramifications: ethics, collections, records, insurance, fees, etc. At this coming session a few of these topics will be discussed and the others carried on in future meetings in order to adequately cover the field. The committee also attempted to ascertain what the members desired in the way of programs by sending a questionnaire to each of the 19 local associations. The questionnaire asked what topics and speakers the membership wanted to hear, whether certain topics were over or under emphasized, names of local practitioners willing and able to present a talk and any other comments. Of the 19 sent seven were returned and were of invaluable assistance in planning the program. We are very grateful to associations that assisted in this respect. Without exception all associations desired to have more practitioners on the program. Also, nearly without exception (one name submitted) there were no speakers in any of the groups. We all know that there is in California a large number of excellent practioners. Yet obtaining the names of these men is a difficult task. It is impossible to put practitioners on the program unless you give us assistance as to possible speakers. It is not feasible nor economically possible to fill the program with out-of-state speakers when we have so much local talent available.

Even though a lot of the members cannot attend the meetings they are nevertheless interested in the papers presented. In the past we depended on the speakers themselves to submit their papers for publication in THE CALIFORNIA VETERINARIAN. This proved a nearly impossible task as in many instances no papers were prepared for the talk. As a result only brief mention was made of most papers in our magazine. The program committee was cognizant of this fact and has made the following recommendation to the executive committee: that two tape recorders be purchased by the association and all sessions be thus recorded. The transcribed notes could be sent to the associate editors of THE CALIFORNIA VETERINARIAN for editing and published nearly in their entirety in our magazine. In this way everyone has a chance to review the talk and study it at their leisure. Also an invaluable backlog of excellent material would be available for the magazine. It is sincerely hoped that this will be accomplished at our June meeting.

So it becomes obvious that the burden of presenting good programs is primarily a function of all the members of our association. It is up to you to let us know what you want to hear, whom you want to hear and, more particularly, the names of people you know here in California who are program possibilities. In that way the program committee working under your supervision can arrange the program you want to hear.

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Appointed

E. R. Squibb & Sons have announced the appointment of Paul R. Wolfgang as manager of the Veterinary Sales Department. Mr. Wolfgang was graduated from the Philadelphia College of Pharmacy and Science with the degree of Bachelor of Science in Pharmacy, and began his career as a salesman for Wyeth. Before moving to Squibb, he was manager of veterinary and animal husbandry activities for Merck. He succeeds Donald G. Perkins, who will serve as special consultant to the company on veterinary sales and promotion.

Auxiliary Plans Progress

Tentative plans for the June meeting of the Women's Auxiliary include a cocktail party on Monday, June 22, 1953, the annual luncheon Tuesday, June 23, 1953, and a trip to Knotts' Berry Farm Wednesday, June 24, 1953. The schedule will not be too full, and the ladies will have time for their individual pursuits.

Mrs. Hage has appointed Mrs. Eugene Jones and Mrs. Mack Scott at local co-chairwomen, and Mrs. H. I. Ott as publicity chairwoman.

In Memoriam

DR. ARTHUR J. WAHN

With deep regret we report the passing of Dr. Arthur J. Wahn. He was a native of Cincinnati and resided in Burlingame for the past nine years. He died at his home, 340 Bloomfield Road. During this nine years he was Inspector in Charge of the Meat Inspection Division, Bureau of Animal Industry, U. S. Department of Agriculture for northern California and western Nevada with headquarters in San Francisco, California.

Dr. Wahn was a graduate of Cincinnati Veterinary College and spent over 26 years with the Bureau of Animal Industry after graduation. He was stationed with the Meat Inspection Division at various places during his career, including New York, Vermont, Connecticut, Virginia and Ohio, ending his service in San Francisco.

Dr. Wahn is survived by his widow, Mrs. Rena M. Wahn.

Dr. Eckert Succeeds Dr. Wahn

Dr. A. F. Eckert succeeds Dr. A. J. Wahn as inspector in charge of federal meat inspection in the San Francisco area.

Dr. Eckert is a graduate of the Ontario Veterinary College, Guelph, Ontario, Canada, class of '31.

His experience in meat inspection began in 1932 in Chicago, Illinois. During the years from 1943 to 1948 he was employed as plant superintendent of the Illinois Meat Company located in Chicago. Since that time he has worked on meat inspection in Omaha and later has held such assignments as inspector in charge, Miami, Oklahoma; inspector in charge, Topeka, Kansas; and assistant inspector in charge, New York, N. Y.

Dr. Eckert has a wife and three children; a daughter, Beverly, who is married and lives in Chicago; a son, Blair, in the Air Force; and a daughter, Penelope Kay, who is still at home.

Golf Tournament

The Long Beach committee has arranged a golf tournament to be played at the Meadowlark Golf Course, Long Beach, Monday, June 22d, at 8 a. m. Dr. Rollin R. Smith, Torrance, is chairman. Trophies will be given winners. For full particulars write to Dr. Smith.

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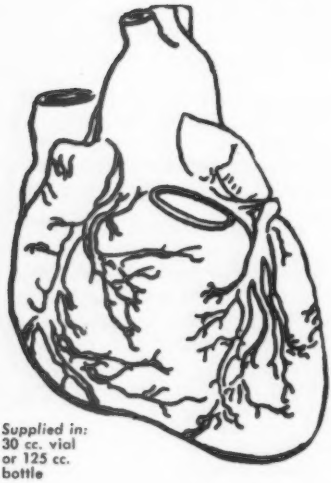

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BOOK REVIEW

THE ANATOMY OF THE DOMESTIC ANIMALS, *by S. Sisson*, S.B., V.S., D.V.Sc., Ohio State University, Columbus, Ohio; revised by J. D. Grossman, Ohio State University, Columbus, Ohio. 972 pages, 738 figures; 4th edition, revised. W. B. Saunders Co., Philadelphia and London.

This monumental text and reference work on veterinary anatomy is out in an attractive red cover, but examination of the text reveals few changes. The impression is that we have an old and faithful friend suddenly blossoming forth in a new coat.

A noteworthy addition is a frontispiece showing the likeness of Septimus Sission, accompanied by a short biographical sketch. Thus, some of the legend surrounding the man becomes fact, and it is possible to appreciate more the precise scholarship that has gone into the preparation of this book, which is now part of the tradition in veterinary education in America.

There is very little change in the text itself. The section on osteology of the horse shows slight rearrangement, and several new figures have been added. No modifications in emphasis or terminology are incorporated. The book remains essentially the same concise, excellently illustrated treatise so familiar to students and veterinarians trained in the modern era.

It is, perhaps, regrettable that a book of this caliber fails to show development toward more adequate anatomical treatment of the ox and the dog, with a corresponding decrease in emphasis on the horse. Such a changing viewpoint would be more in line with modern trends in both the study and practice of veterinary medicine. There appears to be some danger that the "Anatomy of the Domestic Animals" might eventually be relegated to the capacity of a reference text because of the increasing need to teach anatomy in less time, from a functional point of view, and with emphasis on species other than the horse.

Nevertheless, this great book is still worth its weight in gold to the student, the teacher, the research worker and the practicing veterinarian, and this bright, new edition will look well and perform well on the bookshelves of all these men of the profession. There are many advocates of the statement made by one veterinarian to the effect that "Sisson is probably the most used book in veterinary literature."—*John F. Christensen, D.V.M., School of Veterinary Medicine, University of California, Davis.*

Hydatid Infection

GEORGE L. HUMPHREY, D.V.M., M.P.H.
Assistant Public Health Veterinarian
California State Dept. of Public Health, Berkeley

The recent release from the Veterinary Public Health Division of the U. S. Public Health Service of an article by Robert Rausch[1] brings to mind the possibility that dogs entering California from Alaska may be infected with the hydatid tapeworm *Echinococcus granulosus* and the resultant danger of human infection.

Investigation of hydatid disease in Alaska has been one of the main projects of the Animal-borne Disease Branch of the Arctic Health Research Center for the last three and one-half years.

On mainland Alaska, hydatid infection consists basically of a moose-wolf cycle. In the Palmer area of the Matanuska Valley 50-75 per cent of the adult moose are estimated to have hydatid cysts in the lungs. Ten to 40 per cent of the wolves examined, depending on the area, have been found infected. Species of arctic foxes, the red fox, and dogs are commonly involved. The incidence of infected dogs has been found to be as high as 25 per cent. Dogs found positive on autopsy have originated from Barrow, Wainwright, Noatak, Kotzebue, Anaktuvuk Pass, Arctic Village, and Fort Yukon.

The infection cycle on St. Lawrence Island is different than that found on the mainland of Alaska. Here it is essentially an arctic fox—small rodent infection cycle. Natural infections have been found in two of three specimens of a red-back vole, *Clethrionomys rutilus albiventer*, and in more than 2.5 per cent of about 500 specimens of a field vole, *Microtus oeconomus innuitus*. Dogs are considered to be involved to an important degree insofar as human infections are concerned on St. Lawrence Island.

Inasmuch as it is not uncommon for dogs, both native Alaskan and the personal pets of servicemen and their families returning from Alaska, to enter California from Alaska, it would be well for the veterinary profession of the state to be aware of the possibility of *Echinococcus granulosus* infection in dogs from Alaska and the resultant danger to persons in contact with such infected pets.

[1]Rausch, Robert: *Hydatid Disease in Alaska, With Reference to the Control of Infected Dogs.* (Arctic Health Research Center, U. S. Public Health Service, Anchorage, Alaska). Mimeograph release by the Veterinary Public Health Division, C. D. C., U. S. Public Health Service, Atlanta, Georgia, January 1953.

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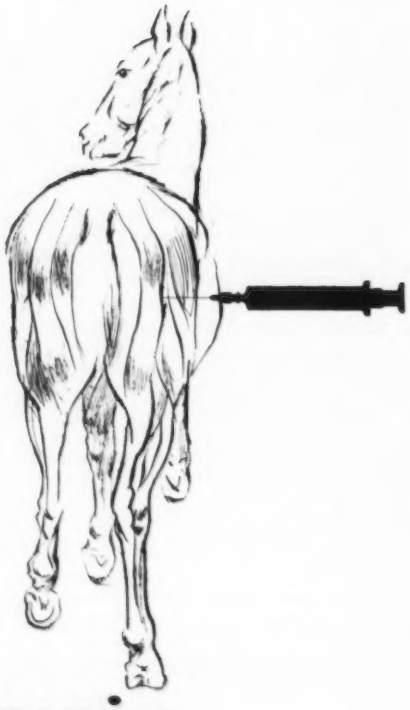

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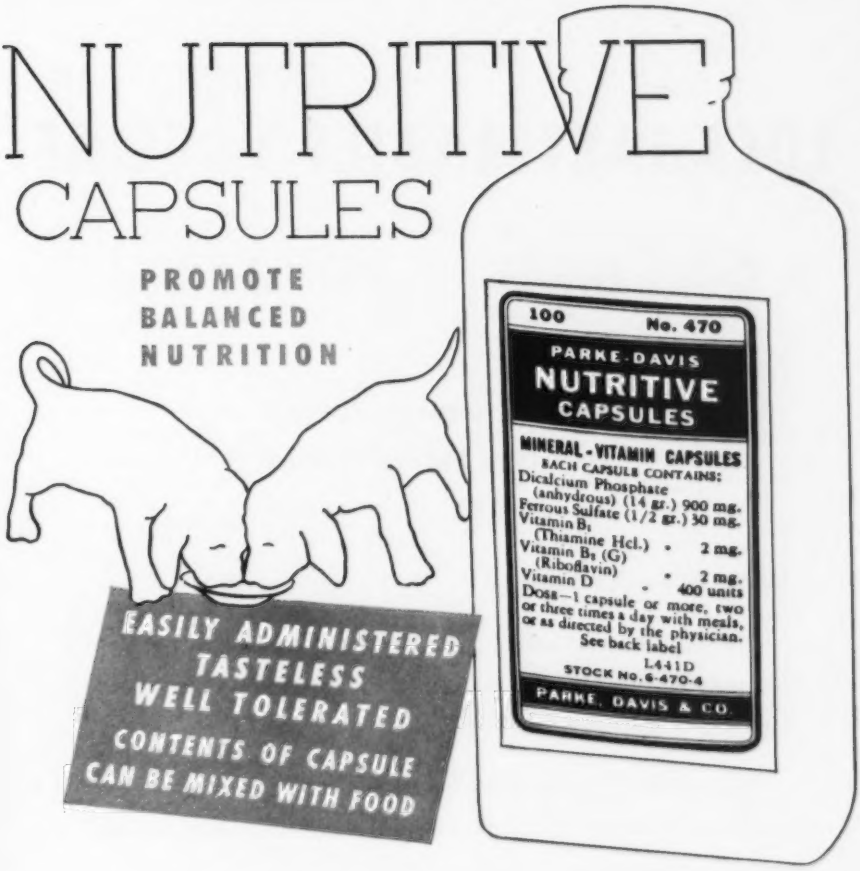
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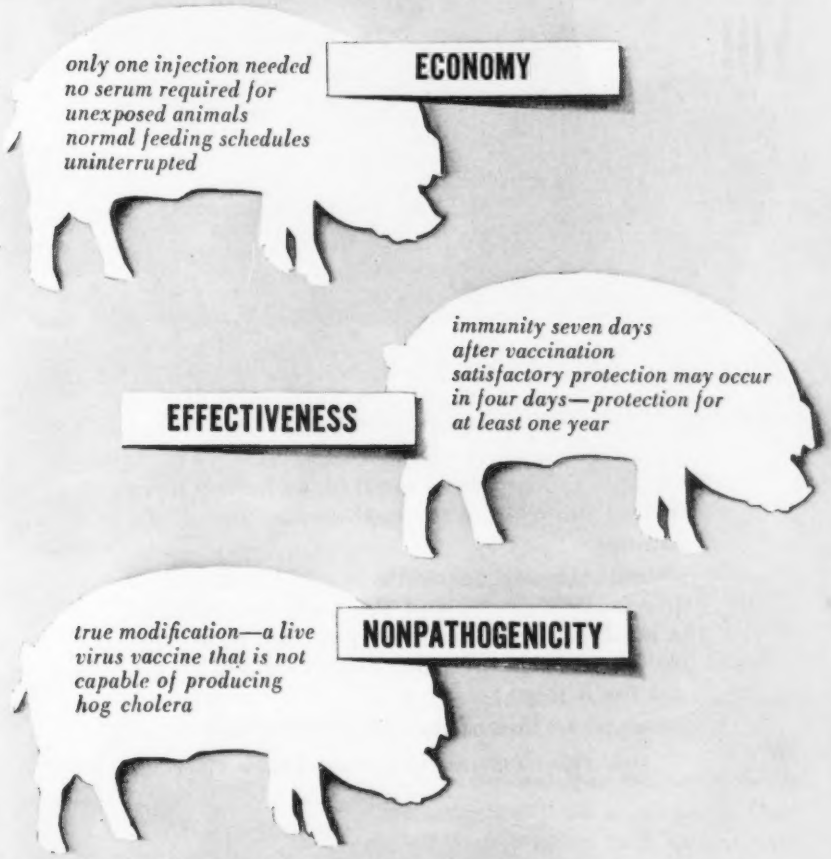

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